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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,147	03/31/2004	David R. Bogue	030048136US	8216

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EXAMINER	
COLLINS, TIMOTHY D	
ART UNIT	**PAPER NUMBER**
3643	

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/815,147	BOGUE, DAVID R.	
	Examiner	Art Unit	
	Timothy D. Collins	3643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 28-34* is/are pending in the application.

4a) Of the above claim(s) *4,8,14,22,30 and 33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7,9-13,15-19,21,28,29,31,32 and 34* is/are rejected.

7)☒ Claim(s) *20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/15/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of invention I in the reply filed on 9/21/05 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3,5-7,9-11,13,15-19,21,28,29,31,32, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5378524 to Blood, hereinafter called 524.

a. Re claim 1, 524 discloses an airfoil 45, with upper surface and lower surface. Also 524 discloses that these surfaces may be covered with "shock control protrusions" as seen in figure 4 at least. In figure 4 it can be seen that the surface 34 has cavities 21 as disclosed. However if one takes the bottom of the cavity as the surface of the claimed invention, then it can be seen that the surface has protrusions (the sections that are between the "surfaces" or cavities of the figure 4 and also figure 2. In other words it can be seen that there are protrusions (outward extending areas) with respect to the surface (at the bottom of the cavity) which extend a distance 72 out of the surface. These protrusions will inherently cause a shock extending away from the lower surface when the

airfoil is traveling at some supersonic mach number or at least when the aircraft is traveling at high subsonic mach numbers, where the flow will become supersonic locally over these protrusions before it will over the surface.

b. Re claim 2, 524 discloses that the craft is configured for cruise and subsonic mach numbers inherently in that the craft can inherently "cruise" or fly at a set speed and altitude and also inherently the craft may fly at subsonic mach numbers at least.

c. Re claim 3, 524 discloses that the shock control protrusion is fixed with respect to the lower surface.

d. Re claims 5 and 6, 524 discloses that the protrusion includes a plurality of segments, inherently in that the protrusion is made up of many small pieces or slices just as any curved surface is a series of small curve segments that interact to form the overall curved surface segment. These segments also being "aligned" in that some portion of them is aligned with some portion of the wave created when air flowing over the protrusion segments goes supersonic at at least some freestream mach number.

e. Re claim 7, 524 discloses that the protrusion has a forward portion blended with the lower surface and an aft portion blended with the lower surface in that the protrusions lead into the lower surface at smoothly curved lines as seen at least in figure 4 in that the surface goes down on a curve that leads to the lowest point on the surface at the bottom of the depth 72.

f. Re claim 9, 524 discloses that the craft is covered with the protrusions and therefore they must cover from some inboard section to some outboard section.

g. Re claim 10, 524 discloses inherently that at some mach number the distance 72 will be equal to the height of the boundary layer.

h. Re claim 11, 524 discloses that the wings have upper and lower surfaces and these are on the craft as seen in figure 1.

i. Re claim 13, 524 discloses in column 1 at least that all manner of surfaces may be covered with the protrusions.

j. Re claims 15 and 16, 524 discloses that the protrusions may cover the vehicle and therefore they are within the range of 20-50 percent of the chord of the airfoil. Also they may be in front of and behind one another on a wing.

k. Re claim 17, see rejections of claims 1 and 15 and 16.

l. Re claim 18, 524 discloses that the protrusions may cover the vehicle and therefore some are aligned with the leading edge of the wings.

m. Re claim 19, see rejection of claim 7 above.

n. Re claim 21, see rejection of claim 3 above.

o. Re claim 28, 524 discloses that the craft has a fuselage in figure 1, and also see rejection of claims 1 and 17 above.

p. Re claim 29, see rejections of claims 1 and 15 and 16.

q. Re claim 31, see rejection of claim 3 above.

r. Re claim 32, see rejection of claims 1,5,6 above.

s. Re claim 34, 524 discloses that the protrusions may cover the vehicle and therefore some are aligned with the leading edge of the wings.

4. Claims 1-3,5-7, 10,12,15,28,29,31 and 32 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by USPN 5692709 hereinafter called 709.

t. Re claim 1, 709 discloses an upper portion as seen in figure 1a at the top, and lower portion as seen in figure 1a at the bottom, and a shock control protrusion 32, which generates a shock at a mach number as seen in the specification and title of the reference.

u. Re claim 2, 709 discloses that the craft is configured for cruise and subsonic mach numbers inherently in that the craft can inherently "cruise" or fly at a set speed and altitude and also inherently the craft may fly at subsonic mach numbers at least.

v. Re claim 3, 709 discloses that the shock control protrusion is fixed with respect to the lower surface.

w. Re claims 5 and 6, 709 discloses that the protrusion includes a plurality of segments, inherently in that the protrusion is made up of many small pieces or slices just as any curved surface is a series of small curve segments that interact to form the overall curved surface segment. These segments also being "aligned" in that some portion of them is aligned with some portion of the wave created when air flowing over the protrusion segments goes supersonic at at least some freestream mach number.

x. Re claim 7, discloses that the protrusion has a forward portion blended with the lower surface and an aft portion blended with the lower surface in that the protrusions lead into the lower surface at smoothly curved lines as seen at least in figure 10 in that the surface goes down on a curve that leads to the lowest point on the surface. Note, that the applicant has not specifically defined on what scale "smooth" is supposed to be. On some order every intersection is smooth, and in fact on the smallest of scales all smooth intersections look very rough.

y. Re claim 10, 709 discloses inherently that at some mach number the height will be equal to the height of the boundary layer because the BL grows with mach number and at some mach number it will be inherently the same size.

z. Re claim 12, 709 discloses that the protrusion is about between 5% and 20% the chord as seen in figure 1a.

aa. Re claim 15, 709 discloses that the protrusion is within the range of 20-50 percent of the chord of the airfoil as seen in 1a.

bb. Re claim 28, 709 discloses that the device is on an aircraft and therefore there must be a fuselage. Also see rejection of claim 1.

cc. Re claim 29, 709 discloses that the device is an aerodynamic surface on an aircraft and therefore the device may be called a wing.

dd. Re claim 31, 709 discloses that the shock control protrusion is fixed with respect to the lower surface.

ee. Re claim 32, 709 discloses that the protrusion includes a plurality of segments, inherently in that the protrusion is made up of many small pieces or slices just as any curved surface is a series of small curve segments that interact to form the overall curved surface segment. These segments also being "aligned" in that some portion of them is aligned with some portion of the wave created when air flowing over the protrusion segments goes supersonic at at least some freestream mach number.

Allowable Subject Matter

5. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following disclose shock control protrusions.

ff. USPN 5171623, can be used to support a very similar rejection to reference 524 above.

gg. USPN 4121787

hh. USPN 6588703, discloses controlling shocks on the lower surface of a wing

ii. USPN 5018683

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy D. Collins whose telephone number is 571-272-6886. The examiner can normally be reached on M-F, 7:00-3:00, with every other Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter M. Poon can be reached on 571-272-6891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy D. Collins
Patent Examiner
Art Unit 3643